Newsletter of the National Biological Information Infrastructure

nbii Access

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Bees of the World Checklist: Newly Compiled and Available Online

Biologists have completed an online effort to compile a world checklist of bees. This project, coordinated by staff of the Integrated Taxonomic Information System (ITIS) <http://www.itis.gov/> and involving leading bee specialists on six continents, has identified nearly 19,500 bee species worldwide, about 2,000 more than previously estimated.

While the vast majority of known bee species do not make honey or live in hives, they are essential pollinators of native and cultivated plants, including most non-cereal food crops. Honey is made by nearly 500 species of tropical stingless bees, in addition to the well-known honey bee *Apis mellifera*. There is a current crisis known as "colony collapse disorder,"

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Photo credit: Elizabeth Sellers / NBII

A honey bee (Apis mellifera) *collects pollen from aster flowers (Asteraceae) in Austin, TX.*

Recent Bald Eagle Monitoring Data Available Through the NBII

Monitoring is a key component for assessing the status and trends of bird populations. With the removal of the bald eagle *(Haliaeetus leucocephalus)* from the federal list of threatened and endangered species in 2007, monitoring of populations remains an important aspect in ensuring that bald eagle populations continue to recover. Each year hundreds of volunteers count eagles along standard routes as part of the Midwinter Bald Eagle Survey. These data are then reviewed, incorporated into population trend analyses that are updated every five years, and made available online via the Midwinter Bald Eagle Count Web site <http://ocid.nacse.org/nbii/eagles/>.

The Midwinter Bald Eagle Count Web site, developed by the

Northwest Alliance for Computational Science & Engineering at Oregon State University with support from the NBII Bird Conservation Node and the NBII Pacific Northwest Information Node, provides access to Midwinter Bald Eagle Survey results for the contiguous United States. Users can retrieve actual count data used in analyses as well as summary information for individual survey routes. They also can obtain

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an unexplained phenomenon that is wiping out colonies of honey bees throughout the United States. This has highlighted the need for more information about bee species and their interactions with the plants they pollinate.

"At a time when biological diversity is suspected to be declining at an alarming rate, it is important to have a solid baseline from which to measure future trends," said Michael Ruggiero, senior scientist for ITIS at the Smithsonian National Museum of Natural History, who led the recently completed project.

ITIS is a critical component of the National Biological Information Infrastructure (NBII) <www.nbii.gov>, which was a major supporter of the world bee checklist project. This checklist will facilitate NBII efforts to provide access to biological data and information about bees. By harnessing the inter-linkages between the currently accepted names, synonyms, and common names found in the ITIS checklist, the NBII will help users find data and information more easily – whether from government agencies, universities, natural history museums, or the many groups with which the NBII works. Users of all sorts will benefit, including resource managers at public agencies, scientists in the public and private sectors, students and educators, and the general public.

The bee checklist acts as a taxonomic "Rosetta Stone"…

"The bee checklist acts as a taxonomic 'Rosetta Stone' that will enhance communication, information exchange, and data repatriation about bees. The completed checklist is a first step in modeling and forecasting future population trends," said Ruggiero.

The NBII Pollinators Project <http://pollinators.nbii.gov/> in particular stands to benefit greatly in its efforts to increase access to information on pollinators, pollinator-related research, and information products from many diverse sources. Other major users of the checklist will include the ITIS and Species 2000 Catalogue of Life <http://www.catalogueoflife.org/>, the IABIN Pollinators Thematic Network <http://pollinators.iabin.net/> (in which the NBII participates), and the Global Biodiversity Information Facility <http://www.gbif.org/>.

The checklist is a composite and synthesis of several contributed lists by leading taxonomists. John S. Ascher, a collaborator and major data contributor from the American Museum of Natural History in New York, was instrumental in assuring the taxonomic quality of the project. The checklist was brought into a highly structured data environment by ITIS personnel and subject to numerous data quality and integrity processes, which led to many modifications in consultation with Ascher and colleagues. The checklist was then provided back to the cooperating international bee taxonomists for final review, and additional modifications were made. Only after passing through these quality control steps was the checklist added into the ITIS database.

The World Bee Checklist is now fully integrated into the ITIS database, and provides scientific name and authorship for all the known bee species within a well-accepted classification, along with synonyms and common names. The full ITIS database is freely accessible on the Web for browsing, as well as for download in its entirety or in part. Further information on the bee checklist, including scientific contributors and additional links, is available via a special page on the ITIS site <http://www.itis.gov/beechecklist.html>.

nbii Access

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Visit the NBII Home Page at <www.nbii.gov>.

Access to Long-Term Butterfly Data in Central California

The Art Shapiro Butterfly Web site describes more than 35 years of data collected by Dr. Shapiro from the University of California, Davis, in his continuing effort to monitor butterfly population trends on a transect across central California. Ranging from the California's Coastal Range, through

Butterflies are considered one of the animal groups most sensitive to environmental change…

the Sacramento Valley and Sierra Nevada mountains, to the high desert of the western Great Basin, fixed routes at ten sites have been surveyed at approximately two-week intervals since 1972. Approximately 83,000 individual records of 159 butterfly species and subspecies are included in this database. In addition, daily climate records that correspond to each collection site have been added to the database so that effects of climate can be studied. These data were collected by the Western Regional Climate Center administered by the National Oceanic and Atmospheric Administration (NOAA).

Butterflies are considered one of the animal groups most sensitive to environmental change and the impact can be detected in terms of the number of species, timing of their emergence, range shifts, and overall numbers. These data represent one of the longest sets of continuous butterfly surveys anywhere in the world and one of the few designed from the beginning to examine the impacts of changing weather. Both ecologists and climate-change researchers will use the information to help identify changes to climate and butterfly populations over time. In addition, the site contains

Photo credit: Erik Runquist

Information on woodland skipper (Ochlodes sylvanoides) *– and many other butterfly species from central California – are available through the CAIN site.*

numerous photographs, identification aides, and natural history information.

Current work on the project focuses on comprehensive analysis of ecological trends embedded in the data and on enhancing data access and adding queries such as the following, which are publicly accessible:

- Analysis of phenological trends at each of the ten sites included in the transect;
- Analysis of changes in species richness and abundance for each site;
- Butterfly taxonomy;
- Number of visits by site;
- Number of visits per year by site;
- Sites for a species;
- Species presence by site;
- Weather data by site including an average for minimum and maximum temperature by month; and
- Weather data by site with total precipitation by year.

In addition, a Web mapping component will be added to the site descriptions to enhance data access by site. Also, many of Dr. Shapiro's site images along with full descriptions will be added. Long-term priorities include continued analysis of the collected data, enhancing data download capabilities, improved identification tools, incorporation of modeling software, and finer-scale mapping for researchers.

The site was developed in collaboration with the Information Center for the Environment (ICE) at the University of California, Davis, with support from the National Science Foundation (NSF) and the NBII. Specifically, the California Information Node (CAIN) provided support related to Web development and digitizing paper records. Currently, the site has limited NSF funding support and is primarily updated through in-kind efforts from ICE students and programming staff.

The value of these types of data sets – those with more than 30-year biological surveys – is that they contribute to our understanding of how climate and landscape change affect populations and biodiversity "monitoring." At the same time, a significant challenge to this project, as with many long-term ecological data sets, is maintaining ongoing support for repetitive field surveys by experts on the target species. UCDavis and the NBII are eager to explore additional ways to continue this important work. If you are interested in participating, please contact Dr. Shapiro <amshapiro@ucdavis.edu> or Dr. James Quinn <jfquinn@ucdavis.edu>.

For more information, please visit <http://butterfly.ucdavis.edu> or through the CAIN site at <http://cain.nbii.gov>.

Metadata Workshops Go Global

In June 2008, members of the Inter-American Biodiversity Information Network (IABIN) convened for a data management meeting in Knoxville, TN. A wide range of countries from Central and South America were represented. The agenda included a mini-workshop about NBII metadata standards to be adopted and used by IABIN. The Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata and the Biological Data Profile were taught by Viv Hutchison of the NBII in a three-hour session.

Participants at the IABIN 2008 meeting in Knoxville, TN. Back Row: Pedro Correa, Ben Wheeler, Jim Erwin, Tim Robertson, Eduardo Dalcin, Christine Fournier, Mike Frame. Front Row: Viv Hutchison, Miguel Blanco, Luisa Neira, Manuel Vargas, Vince Abreu, Boris Ramirez.

The presentation included a demonstration of how to use Metavist software to create metadata records that describe scientific data sets. All participants were given a workbook with instructions on how to create compliant records and a copy of the software. Ongoing discussions about records in the Spanish language will be occurring between IABIN and the NBII Metadata Clearinghouse team, with a possible goal of including both a Spanish and an English version of a metadata record in the catalog.

In late July, the NBII sponsored a preconference course for the Society for Conservation Biology conference in Chattanooga, TN. Most workshop participants traveled to the conference from a variety of international locations, such as Italy, China, Bolivia, Great Britain, and

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Recent Bald Eagle Monitoring Data (continued from page 1)

population trend estimates for different regions and states.

New analyses on bald eagle population trends from 1986 through 2005 were made public in 2008 by the USGS Forest and Rangeland Ecosystem Science Center to coincide with the 30th anniversary of the Midwinter Bald Eagle Survey. Results from these analyses, available online via the Midwinter Bald Eagle Count Web site, and based on 178,896 observations of wintering eagles during 8,674 surveys of 746 routes in 43 states, show wintering bald eagle populations increasing nationwide at a rate of 1.7 percent per year. Population increases over the 20-year period were highest in the northeast portion of the United States, with a 6 percent increase each year. In contrast, bald eagle population trends in the southwest United States decreased 1.2 percent each year over 20 years. Seventy-six percent of survey routes north of 40 degrees latitude had increasing population trends, but only 50 percent of routes south of 40 degrees latitude showed increasing trends.

Continuity of the Midwinter Bald Eagle Survey and its results ensures availability of long-term data on status of bald eagle populations in the United States. The National Wildlife Federation began the survey in 1979, and the USGS organized and coordinated it from 1997 to 2007. In 2007, the USGS established a partnership with the U.S. Army Corp of Engineers (USACE) to maintain the long-term, national coordination of the survey, data analysis, and reporting.

USACE plays a significant role in recovery efforts of the bald eagle by supporting eagle conservation, including breeding season and midwinter surveys, management of habitat, education, and outreach. The geography of USACE projects has also been vital to bald eagle populations. USACE manages over 450 man-made lakes within the continental United States and has jurisdiction over approximately 24,000 miles of inland navigation rivers. USACE reservoir projects encompass approximately 11.6 million acres of land and open water habitat, with the total shoreline length exceeding the entire coastline of the United States.

This project continues to be supported by the USACE and the NBII Program to help ensure availability of long-term environmental and natural resource information, data, and systematic analyses needed by land and resource managers for informed decision-making.

Invasive Species Toolbox

Do you have news about an invasive species project that you would like to share through this column? The Toolbox is a collection of useful items and highlights related to invasive species information management issues. Please send any ideas or suggestions you might have about Toolbox columns to <asimpson@usgs.gov> or <esellers@usgs.gov>.

New Invasive Species Data Aggregator Under Development

A consortium has formed to develop an online, GIS-based, all-taxa invasive species mapping tool to be called iMapInvasives. The tool will focus on serving the needs of invasive species managers. The new system will be able to map point and polygon-based invasive species location data; by 2009, it will also be able to track treatment information. Still in development, this project will utilize an innovative group membership system (with a $5,000 yearly state membership fee) so partners within a state can submit their data to the system. Founding partners are the Florida Natural Areas Inventory, the New York Natural Heritage Program, The Nature Conservancy, and NatureServe. See <http://www.imapinvasives.org> for more details.

A Very Handy Bee Manual

The latest edition (June 2008) of "The Very Handy Manual: How to Catch and Identify Bees and Manage a Collection" is now available online for download from <http://pollinators.nbii.gov/portal/community/Communities/Ecological_Topics/Pollinators/About_the_Project/Projects/Bee_Identification_Guides>. Compiled mainly by Sam Droege at the USGS Native Bee Inventory and Monitoring Lab, with input from specialist researchers and taxonomists from 2004–08, this guide provides detailed instructions on bee monitoring techniques, including specimen collection, processing and management, and bee identification. It also includes the North American Alien and Introduced Bee List (see below).

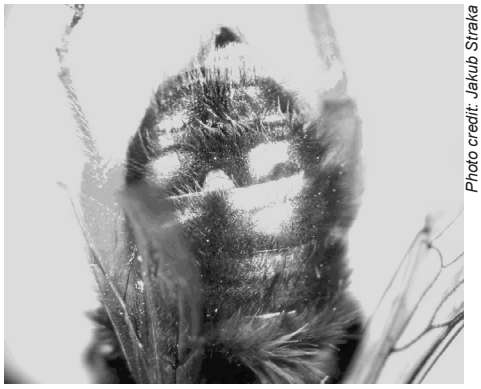

Photo credit: Jakub Straka

Stylopid parasite (insect order Strepsiptera) on the bee species Andrena clarkella. *The parasite is the light-colored half-moon shape in the middle of the picture. From "The Very Handy Manual" by Sam Droege.*

North American Alien and Introduced Bee List

USGS Scientist Sam Droege has compiled a list of current bee species that have been introduced intentionally or accidentally into North America. The list is updated on an ongoing basis and will be integrated into "The Very Handy Manual" (see above). This version of the Alien and Introduced Bee List was created with support from bee biologists Mike Arduser, John Ascher, Rob Jean, Jack Neff, and Robbin Thorp. This list is available for download from <http://pollinators.nbii.gov/portal/community/Communities/Ecological_Topics/Pollinators/Conservation/Threats_to_Native_Species/Introduced_and_Invasive_Species/European_Honey_Bees_(Apis_mellifera)/>.

Digital Image Library: Over 10,000 Images and Rapidly Growing

The NBII Digital Image Library (DIL) <http://images.nbii.gov> – which makes a collection of high-quality biological images freely available for nonprofit use – recently surpassed 10,000 images. Over 30 scientists, photographers, and organizations have donated photographs of species, habitats, environmental issues, and research and management methods, along with detailed descriptions that make each image useful for research and education (such as the date, location, and methods utilized). Another 40,000 images are already in agreement to be added, and should be onboard soon due to new processing procedures and a talented group of new volunteers.

Photo credit: Bruce Avera Hunter

This photograph of an adult male five-lined skink (Eumeces fasciatus) *became the 10,000th image added to the DIL collection.*

Even more images are coming, as other image galleries and NatureServe are signing on to serve their images through the DIL. To help support this huge increase in image numbers, the DIL will roll out new upload and Web 2.0 tools this winter. So stay tuned … and please contact the DIL Lead, Annette Olson <alolson@usgs.gov>, for more information.

NBII in the News

• The NBII Northeast Information Node (NIN) is building on an existing cooperative agreement with the University of Connecticut to expand collaboration with the Invasive Plant Atlas of New England (IPANE). IPANE is working with the Center for International Earth Science Information Network (CIESIN) — the NIN lead partner — to develop a Web mapping shell interface that provides a variety of data and information on invasives. A link to these activities is made in an article by Robert Varney titled "My view: Students work to save Great Marsh," which appeared in the June 17, 2008, edition of *The Salem News* <http://www.salemnews.com/puopinion/local_story_169000336.html?keyword=secondarystory>. Varney describes the far-reaching effects that invasive, exotic plants are having on New England's forests, fields, and wetlands.

• An article titled "An Online Collection of Plant Images" appears in the April–June 2008 edition of *The Plant Press,* a quarterly publication of the Smithsonian National Museum of Natural History. The piece discusses an agreement the NBII Digital Image Library (DIL) <http://images.nbii.gov/> has with the Smithsonian Institution's (SI) Department of Botany that has already produced almost 4,000 images for the DIL, as well as SI's Plant Images Collection (see publication at <http://botany.si.edu/pubs/plantpress/vol11no2.pdf>).

Photo credit: Ted Niehaus

The yellow flower of American skunkcabbage (Lysichiton americanus) *is just one of many DIL images now also offered by the SI Plant Images Collection.*

• Working in collaboration with the USGS Pacific Island Ecosystems Research Center and the Maui Invasive Species Committee (MISC), the NBII Pacific Basin Information Node has begun implementing a multiagency invasive species early detection program in Maui County. This program is providing identification and report creation training to partner agencies and targeted members of the public in the hopes of stimulating the early detection of high threat incipient pests, as well as providing a model for other counties in Hawaii. Twenty-seven priority pest species were chosen by MISC and the Molokai Invasive Species subcommittee. A Web site containing identification information for these priority pests, as well as multiple simple reporting methods, is now online <http://www.reportapest.org>. The Web site includes an online report. Validated reports of target species will then be distributed to the partner agencies tasked with control. Recent articles from Maui newspapers on this subject include "Invasive species battle taken to the masses" <http://www.mauinews.com/page/content.detail/id/503781.html>, "Invasive species fighters on road to teach and recruit" <http://www.mauinews.com/page/content.detail/id/505160.html>, and "The Silent Invasion" <http://www.mauiweekly.com/Malama%20Aina/story7246.aspx>.

Metadata Workshops Go Global (continued from page 4)

Costa Rica. The full-day course was taught by Viv Hutchison and included several in-class learning exercises and a hands-on computer introduction to the Metavist software used to create a metadata record. The workshop was a big success! Many thanks to the members of the NBII Southern Appalachian Information Node (Jean Freeney and Andy Carroll) who helped with various aspects of making the workshop happen.

Interest in metadata workshops has increased steadily over the years, from both the international community and U.S. audiences. With the advent of the International Organization for Standardization (ISO) metadata standard on the horizon for the United States (it has been adopted by the American National Standards Institute [ANSI]), the current FGDC metadata standard will be transitioning to a version of the ISO standard called the North American Profile (NAP). This transition will allow international communities to better share data with the United States, as more and more clearinghouses begin hosting records with a global audience in mind. Biodiversity protection is an issue facing all countries – and the more we share, the more we know!

For more information about metadata workshops sponsored by the NBII, visit <www.nbii.gov> and follow the Metadata links, or contact Viv Hutchison at <vhutchison@usgs.gov> or 206/526-6282, ext. 329.

NBII, IABIN Roll Out New Search Tool

The NBII and its partners at the Inter-American Biodiversity Information Network (IABIN) recently unveiled a new search tool, the IABIN Catalog, to allow users to locate prioritized biodiversity data in the Americas. IABIN is an Internet-based forum for technical and scientific cooperation that seeks to promote greater coordination among Western Hemisphere countries in collecting, sharing, and using biodiversity information relevant to decision-making and education. Originally mandated by the Heads of State of the Americas in 1996, IABIN has been implemented in the past four years primarily through a $6 million grant from the Global Environment Facility (GEF) and the World Bank. The IABIN Catalog will be IABIN's primary data and resource retrieval tool, facilitating access to biodiversity information produced and stored throughout the hemisphere.

The IABIN Catalog currently has around 175,000 multilingual resources (Images, Data Sets, Publications, Databases, Species Profiles, Internet Map Services, to name a few) from the NBII Resource Catalog, NatureServe, Biological Federal Geographic Data Committee Metadata Clearinghouses, and biological/ecological literature databases. Additional content from IABIN's Thematic Networks, focusing on data regarding Species and Specimens, Pollinators, Invasive Species, Ecosystems, and Protected Areas, is being added in the weeks and months to come. This content will add hundreds of thousands of new resources from IABIN's partners in Latin America and the Caribbean, and make available and searchable the results of over 100 data content-building grants distributed to institutions throughout the Americas in the past four years.

Following upgrades in early 2009, the IABIN Catalog will also include a multilingual thesaurus, allowing users to retrieve all the results for a search term in English, Spanish, and Portuguese. For example, a search for the English word "Shrimp" will also return results for the Spanish and Portuguese equivalent terms, "Camarón" and "Camarão," and vice versa. A gazetteer will also be included in the catalog in 2009, allowing data and other resources to be pinpointed on a map of the Americas.

The IABIN Catalog is available at <http://iabin-catalog.nbii.gov>._ Please contact Mike Frame <mike_frame@usgs.gov> or Ben Wheeler <bwheeler@usgs.gov> for more information.

I3N Represented at Central American Regional Workshop to Identify and Address Trade-Related Aquatic Invasive Species Pathways, coordinated by NOAA, USAID, and SICA

The USGS Biological Informatics Office (BIO) presented the I3N invasive species database and risk analysis tool at an aquatic invasive species workshop held by the National Oceanic and Atmospheric Administration (NOAA), the U.S. Agency for International Development (USAID), and SICA (Central America Integration System) in San Salvador, El Salvador, July 14–16. I3N coordinates a network of invasive species and experts databases throughout Latin America. Additionally, I3N offers a tool to utilize database information to perform risk analyses and determine potential pathways. More information can be found at <http://i3n.iabin.net/>.

The workshop was attended by representatives of governmental ministries on the environment, fisheries, and livestock health from countries throughout Central America and the Dominican Republic. Participants learned which aquatic species are considered invasive in Central America and the Caribbean, their potential pathways, and how to create best management practices using Hazard Analysis and Critical Control Point (HACCP) software designed by the U.S. Fish and Wildlife Service (USFWS). By answering simple questions about production practices and species characteristics, the USFWS HACCP software determines critical control points in economic activities where the risk of introducing or spreading aquatic invasive species can be minimized.

The I3N database was recognized by various workshop presenters as an authoritative source for detailed species characteristics needed for the completion of an HACCP and for identifying species that are an invasive risk. The contact information for experts on invasive species, which is included in the I3N database, was also seen as a valuable regional resource.

Participants viewed the workshop as a first step toward creating a regional management strategy for aquatic invasive species in Central America and the Caribbean. Further collaborations are planned in the coming year. In September, I3N workshops on identifying invasive species and utilizing the I3N database will take place in El Salvador and Guatemala.

For additional information, please contact Annie Simpson at <asimpson@usgs.gov> or Christine Fournier at <cfournier@usgs.gov>.

Upcoming Events of NBII Interest

Association of Fish and Wildlife Agencies Annual Meeting, Saratoga Springs, NY.	September 7–12
Eastern Regional Wetland Restoration Institute, Olympia, KY.	September 7–12
Environmental Information Management 2008: Managing Sensor Data in Real Time, Albuquerque, NM.	September 10–11
2008 Annual Conference of Landscape Architecture and Urban Forestry: The Nature of Design, Educating for the Future, Knoxville, TN.	September 11–12
16th Annual National Nonpoint Source Monitoring Workshop: Getting the Point about Nonpoint, Columbus, OH.	September 14–18
Wetlands 2008: Wetlands and Global Climate Change, Portland, OR.	September 16–18
11th North American Crane Workshop, Wisconsin Dells, WI.	September 23–27
Raptor Research Foundation 2008 Annual Conference, Missoula, MT.	September 24–28
Native Plant Society of New Mexico 2008 Annual State Meeting, Las Cruces, NM.	September 25–28
6th Eastern Native Grass Symposium: Managing an Ecosystem on the Edge, Columbia, SC.	October 7–10
Western Field Ornithologists Annual Conference, San Mateo, CA.	October 9–12
4th National Conference on Coastal and Estuarine Habitat Restoration, Providence, RI.	October 11–15
62nd Annual Southeast Fish and Wildlife Association (SEAFWA) Conference, Corpus Christi, TX.	October 12–15
OFWIM 2008 Conference and Annual Meeting, Albuquerque, NM.	October 27–30

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